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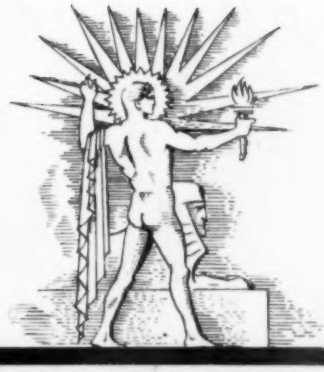
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



June 4, 1938

Spring Storm

See Page 365

A SCIENCE SERVICE PUBLICATION

Do You Know?

A cork substitute is being made from potato peelings in Germany.

Not many birds will eat fuzzy caterpillars, but cuckoos seem to enjoy them.

The smallest and most primitive of wild cattle are the pigmy buffalos of Celebes island.

It is estimated that hookworm affects 5,000,000 out of the 12,000,000 people in rural districts of Egypt.

No one knows how long a dinosaur lived, but the huge ones may have had lives as long as 500 years.

If the earth were to come within 20 million miles of the sun, the earth would be 2,000 degrees hotter, and its rocks would melt to soft mud.

A young Kansas farmer has equipped his tractor with an air horn to signal his wife when he is on the last round, and will soon be in for dinner.

A study of germs on school books indicates that books are not seriously responsible for spreading infectious disease, unless the books are very old and dilapidated or have been used by sick children without proper follow-up precautions.

The theater call-boy, who knocked on dressing room doors to call the actors before curtain time, is being replaced by an installed device which enables an announcer back-stage to be heard in each dressing room.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

AERONAUTICS

What sort of aircraft is able to travel sidewise? p. 360.

ANTHROPOLOGY

How can anthropologists tell what the lifespan of the cave man was? p. 366.

ASTRONOMY

How did Wolf 424 lose the distinction of being closest the earth? p. 365.

BIOLOGY

Will *Biological Abstracts* be published? p. 365.

CHEMISTRY—BOTANY

What unusual discovery was made in the leaves of a hickory? p. 361.

ENGINEERING

How can dust particles be drawn out of the air? p. 361.

How did the use of acids to boost production from oil wells make trouble for petroleum engineers? p. 363.

ENTOMOLOGY

What is the news from the battlefront of the war against grasshoppers? p. 364.

GENERAL SCIENCE

What disease is a major culprit in taking the lives of infants and the unborn? p. 361.

GEOLOGY

Is iridium for fountain pen points found in America? p. 359.

Where does Philippine manganese find a market? p. 364.

PHYSIOLOGY

Why do old men like to sit by the fire? p. 359.

PLANT PHYSIOLOGY

How can you grow plants without any soil? p. 362.

PUBLIC HEALTH

What occupational disease is attacking workers? p. 370.

A collapsible boat of synthetic rubber is a new German invention.

Mountain trout may die of heat, if the water warms up to 75 or 80 degrees.

Phosphate rock deposits discovered and secretly investigated on Hashoma Island by a Japanese company may be so large as to make Japan self-sufficient in this fertilizer material.

The family tree started by a pair of human beings would produce 2,048,009,000,000 people in 2,000 years—if it were not for epidemics, war, and other agencies of untimely death.

Pure silk is the strongest of textile fibers.

A human being normally sheds about 30 hairs a day.

New Zealand natives made whistles of whale teeth.

Algebra gets its name from the Arabic *al-Jabr*, meaning binding together.

As early as 1694, Massachusetts ordered a closed season on hunting deer.

Observers report that motorists who travel alone drive faster than those who have passengers.

SCIENCE NEWS LETTER

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PHYSIOLOGY

Explains Why Older Men Win Marathons, Boys a Short Dash

For the Same Reason That Old People Seek the Fire, Older Persons Excel Only on Slower Movements

THE REASON why it takes a young man to win the 100-yard dash and an older man to win a marathon or set a record for the 10-mile race is the same as the reason why old people seek a place by the fire and wear heavier clothing than young people. The explanation for this was given by Prof. Walter B. Cannon of Harvard Medical School, speaking at Mount Sinai Hospital in New York City.

Nurmi set the 10-mile record when he was 31 years old and old men and women hug the stove because of the aging of "homeostatic mechanisms." This term refers to the mechanisms which keep the blood and other body fluids stable and which also, as shown by recent research, maintain uniformity over other conditions in the body.

As examples of some of these other conditions Dr. Cannon gave the flushing of active muscles with abundant blood when they are vigorously at work, thus providing them with oxygen and washing away their waste; the special provisions for an adequate blood supply to essential and highly sensitive organs such as the brain and heart when severe hemorrhage occurs, the blood supply to other parts of the body being temporarily diminished at such times in order that there may be an adequate flow to those structures which are of supreme importance to the organism; and the plenteous blood supply to glands of internal secretion such as the thyroid and adrenal, which put forth locally from their surfaces powerful secretions.

Poor Heat Control

Describing what happens when the mechanisms for maintaining these conditions begin to age with the rest of of the body, Dr. Cannon said:

"As men grow older the body temperature is maintained at the usual fairly uniform level, but the agents maintaining it become gradually more and more defective. The rate of heat production in the body gradually falls until it is about 25 per cent. less in late senescence than it is in early manhood. For this reason old people seek a place by the stove or open fire or other source of heat, or wear heavier clothing than the young.

"There is also a gradual lessening of the ability to accommodate to high temperature because sweating and dilation of the surface vessels, by means of which heat is lost from the body, become deficient as the skin undergoes atrophy and the blood vessels stiffen in later years of life. For this reason there is a sharp rise in the death rate from heat stroke in the decades after the 70th year.

"Limitations of similar character are seen when vigorous muscular activity is undertaken. The bounds are set in part by restriction of the so-called 'vital capacity'—the maximal to-and-fro movement of the air in breathing. From early manhood until the 60th year the reduction may be 20 per cent. and by the 9th decade it may be reduced more than one-third. This is largely due to increased stiffening of the chest wall.

"Furthermore, the blood pressure is likely to rise in the late years because the arteries become less elastic and therefore do not adapt themselves to the needs of the active muscles in physical exertion.

Heart Won't Adjust

"The heart likewise shows a lessened ability to adjust itself to bodily needs; in experimental tests the maximal heart rate in youth during maximal work averaged 196 beats per minute, whereas in the 60's the maximal rate was 163 beats per minute, a reduction of about 16 per cent. As a result of these limitations insufficient oxygen is delivered to the active muscles to burn the lactic acid which is produced by vigorous muscular exercise, and consequently performance is much reduced.

"In harmony with these observations there is the fact that records in competitive sports are held by young persons when quick actions are required, and by older persons when slower actions are allowed. The record in the 100-yard dash was made by a young man of 21 years. The running records from 1 to 5 miles are held by men from 23 to 27 years of age. The record for 10 miles was made by Nurmi when 31 years old. DeMar, who ran marathons between his 22nd and his 50th years, was at his best between 36 and 42. Baseball players are rarely first-rate after about the middle of the 4th decade. Indeed, there are few stars in sports after 40. These limitations are due to the gradually reduced ability of homeostatic mechanisms to maintain stable states in the body fluids as one grows older."

Science News Letter, June 4, 1938

GEOLOGY

Platinum-Like Metal Found In Alaska

IRIDIUM, heavy noncorrodible metal, used in electrical contacts, fountain pen points and as a hardener for dental gold, comprises more than one-fifth of the platinum-metals content of some of the Platinum Creek, Alaska, placer deposits, reports Dr. J. B. Mertie, Jr., of the U. S. Geological Survey, who described his studies of the Alaska platinum mines to the Geological Society of Washington.

Gold, containing iron as the impurity, in place of the usual copper, found in the placer deposits along with the plati-

CITIZEN OF KISH

This tiny portrait of a Sumerian, who lived in Kish 4,500 years ago, is attracting attention at Chicago's Field Museum. Greatly enlarged in this picture, the real sculptured head is only 3/16 of an inch tall. It was found during recent excavations by a seven-year-old Arab with pretty sharp eyes.

num, may be related to the same mineralization that brought the platinum to the surface from the deep-lying hot rocks at some time in the past, Dr. Mertie believes. Another type of gold, found in the same area, was brought in by glaciers, from whose deposits the gold was washed into the platinum mining areas.

Found in woodless, misty rainswept valleys, under several feet of gravel, the Alaskan platinum deposits are producing thousands of ounces of the heavy metal each year, for use in the chemical and jewelry industries.

Science News Letter, June 4, 1938

AERONAUTICS

Place in the Air Predicted For "Windmill" Plane

Plane That Can Take Off Almost Straight Up and Can Hover Low Over the Ground Has Many Uses

WRITE this in your book: a place in the air for the "windmill" aircraft within five years.

Aviation men and others are freely predicting widespread adoption of the new autogiro that is emerging today from years of quiet experimental work without benefit of publicity. A rapidly-growing list of uses is being compiled for new varieties of the "windmill" plane that can do things no ordinary airplane can duplicate.

One of the new autogiros demonstrated by W. Wallace Kellett of Philadelphia, an outstanding designer, took off in 25 feet. It landed almost literally on a dime—the wheels struck the earth and stopped, hardly moving a millimeter.

Up in the air it stood stock still, it moved sideways, it turned as though an axle pierced the fuselage.

And the pilot did all that simply by maneuvering the three whirling blades above the fuselage of the newest type of rotable wing aircraft.

Abilities such as these have the Army interested. Navy men are curious, too, and so are foresters, Coast Guardsmen, persons concerned with air mail and others. It will not be long, the autogiro's backers hope, before these uses become realities.

The autogiro has come a long way during the decade since the late Senor Juan de la Cierva, its inventor who was killed in the crash of a transport plane in 1936 in just the kind of accident he sought to prevent with his odd-looking craft, brought it to the United States.

Today, the trim machine demonstrated by Kellett has no wings, depending for its lift entirely on the whirling blades. With a 225-horsepower motor powering a propeller to give it forward speed and turning the overhead blades for the take off, the autogiro can make 125 miles an hour; it can lift more, rise more sharply and quickly than the predecessors which attracted so much attention hardly more than half a dozen years ago.

For Observation

The Army wants it for "spotting" artillery fire and for observation and reconnoitering. The autogiro would also be useful for liaison operations.

The Navy may find it useful for "spotting" naval gunfire for it has the advantage of being able to hover, yet being so maneuverable that it can follow the course of an enemy fleet. In addition, the autogiro is easily carried on a battleship or smaller war vessel. It needs less space to take off than is occupied by the catapults required by present-day scouting planes. In addition, it can land dead on the ship; battleships today must pick up their seaplanes from the surface of the water.

Airplanes are already in wide use for dusting fields with insect poisons, but it is a risky business, moving along at nearly 100 miles an hour only a few feet above the ground. Hence, another use is seen for the autogiro: hovering a few feet above the ground spreading a chemical cloud is not a risky business for the rotable wing aircraft. Spotting diseased trees has also been successfully accomplished.

Peace Uses

Perhaps chemical forest fire extinction is too expensive to be practical, but the nimble autogiro can bring supplies to forest fire fighters in isolated spots and hover a dozen feet over the men, dropping its load exactly where it is wanted.

Another use may be found in life-saving activities of the U. S. Coast

STRAIGHT UP

The autogiro is shown here rising almost vertically from the landing field. It differs from the Helicopter in that it has a regular propeller to give it forward speed and provide the airstream that whirls the rotor. In the passenger's seat, the Science Service staff photographer snaps a view of the propeller during takeoff.

Guard. Uncle Sam's shoreline guardians make great use of a gun to fire a line to a ship in distress off-shore so that its human freight may be hauled to safety over the breeches buoy. But there are limits to the distance the gun can fire its rope-weighted projectile. The autogiro offers the possibility of carrying the line to the ship farther than the gun can fire it.

Wide attention has been attracted to rotating wing types of aircraft recently in Europe, where the Focke helicopter was successfully flown inside a large Berlin auditorium. A helicopter is a rotating wing aircraft with no regular propeller at all, depending on tilting of the rotor for forward motion.

Mr. Kellett has been in Washington to urge Congress to pass a bill introduced by Congressman Frank J. G. Dorsey of Pennsylvania to allot $2,000,000 to research in development of the "windmill" plane.

Engineering difficulties in the way of the autogiro that its sponsors hope will be at least partially solved with the aid of the appropriation they are asking of Congress were outlined by Mr. Kellett.

Research on which the sum would be spent would be aimed at increasing both the range and payload of today's autogiros, as well as their speed. The rotor atop the present two-seater is 40 feet in diameter. Larger planes will require larger rotors still, introducing an engineering problem of no mean proportions, he indicated. A more efficient lifting profile for the rotor must also be found.

Science News Letter, June 4, 1938

CHEMISTRY—BOTANY

Rare Earth Elements Found In Leaves of Hickory

CHEMICAL elements so rare that they are merely names in a list even to most chemists have been found in the leaves of a hickory tree growing on a mineral vein in a Virginia mine. Analysis by the delicate spectrographic method has betrayed their presence in at least trace quantities, it is announced (*Science*, May 20) by Drs. W. O. Robinson and Richard Whetstone of the Bureau of Chemistry and Soils, and Dr. Bourdon F. Scribner of the National Bureau of Standards.

The elements all belong to the group known as the rare earths. They are listed as follows: cerium, lanthanum, praseodymium, neodymium, yttrium, samarium, europium, gadolinium, dysprosium, erbium, ytterbium.

Science News Letter, June 4, 1938

GENERAL SCIENCE

Quints Identical, Patterns Of Finger Bases Indicate

Royal Society of Canada Hears of Hereditary Ill As Cause of Infant Mortality; Dust a Weapon for Dust

CANADA'S most famous babies, the Dionne quintuplets, all developed from the same fertilized egg-cell, a new type of fingerprint identification indicates. The new method was described by Prof. John W. MacArthur of the University of Toronto, speaking before the Ottawa meeting of the Royal Society of Canada.

Prof. MacArthur has paid special attention to the skin patterns of the lower joints of the fingers, instead of the more usually studied tips. He finds that the patterns there are even more strongly similar, in twins and other multiple births, than are the tip patterns.

The Dionne children resemble each other very closely in these third-joint prints. No two of them differ by more than 16 per cent. of the patterns, while each of them differs from her brothers and sisters, in the rest of the Dionne family, by about 54 per cent.

Babies in certain doom-haunted families die at an appalling rate, even before birth, from an inherited disease that puts the wrong kind of cells into their blood, Dr. Madge Thurlow Macklin of the University of Western Ontario stated.

The disease is known to physicians as erythroblastosis fetalis. Its effect is the introduction into the blood of an abnormal proportion of colorless cells from the bone marrow, replacing the necessary red blood cells.

"This disease has been stated to be a more potent cause of infant mortality than syphilis," said Dr. Macklin. "It is suggested here that not only is the condition responsible for a high death rate among live-born infants, but for the deaths of many fetuses at varying stages of development as well; so that many miscarriages, premature and still-births are caused by it."

The malady is inherited. Approximately half the children of a family in which the defect has appeared will be affected.

Zinc sulphate solution, similar to the nasal spray used as a protection against infantile paralysis, had a damaging effect on the lining tissues of the nose when used on white rats, Dr. Carl G. Smith of the University of Toronto reported. The damaged lining was eventually replaced by a layer from which the sensory cells were absent. A permanent loss of the olfactory nerve fibers occurred, with atrophy of the region of the brain where these fibers end. The animals' sense of smell was thus destroyed.

Dust against dust, is the possible safeguard against silicosis suggested by researches of Dr. R. C. Sniffen, H. L. Collins and Miss H. E. Williams of the Banting Institute. The three researchers found that animals exposed to a silica dust similar to that found in many mines and quarries readily contracted silicosis, but that when aluminum powder was mingled with the flying dust the animals were protected.

Tumor growth in human flesh followed the injection of a chemical that causes rapid growth of plants, in an unintentional experiment reported by Dr. J. H. W. Willard, of the University of British Columbia. While working with some plants, Dr. Willard accidentally jabbed some of the compound into his own hand. A tumor developed near the tiny wound. Fortunately it was of the harmless or "benign" variety.

Science News Letter, June 4, 1938

ENGINEERING

Make Electrical Device For Cleaning Dust From Air

PRODUCTION of the "precipitron," an electrical device which cleans dust from air by charging the dust particles with electricity and then attracting them to an electrically charged plate, has been begun by a large manufacturer of electrical equipment.

The device was developed by Gaylord W. Penney, young research engineer, 58 years after Sir Oliver Lodge, British physicist, tried to precipitate a London fog by means of electricity. The device charges the dust particles negatively; the particles are then attracted to the positive plate of a "collector." After giving up their charge, they stick to the collector plate.

Science News Letter, June 4, 1938

IN PROF. SHIVE'S GREENHOUSE

All these plants are grown in pots of sterile sand, by the flowing-culture method developed by Prof. Shive and his associates. In the foreground are the ornamental velvet plants; back of them are tomatoes; on the right, covering a pillar, are long trailing stems of Kenilworth ivy.

PLANT PHYSIOLOGY

Plants Grown in Sand Given Mineral Nutrients in Solution

Sterile Grains in a Jar Provide Anchorage for Roots; Method Has Proved Practical in Commercial Gardening

SAND, pure sand, nothing but sand, can supply no food materials to plants. It is itself a rather simple chemical compound, almost insoluble in water and containing nothing that a plant can eat even if it could be dissolved. Sand can therefore furnish something for roots to hold on and support their plant in, but no nourishment.

This reduction of soil functions to the single one of furnishing mechanical support for the roots is exploited to scientific advantage in the experiments of Prof. John W. Shive of the New Jersey Experiment Station, New Brunswick, N. J. He grows plants for his researches in pots of sterile white sand, through which slowly trickles a water solution containing the necessary nutrient salts.

The mineral nutrients are supplied through an ingenious tube arrangement that permits the solution to drip out slowly, just fast enough to keep the sand well moistened. Except that the roots are nestled among the sand grains, they might as well be floating free in water, so far as their nourishment-relations are concerned.

Prof. Shive's plants grow well and are thrifty on this regimen of sand plus water plus a measured diet of mineral salts. So well did they do under his strictly experimental conditions that a newcomer on the horticultural staff of the same institution, Dr. G. T. Nightingale, considered the system worth trying on a practical, semi-commercial basis.

He tested it with a large number of plants, particularly flowers, such as carnations, azaleas, lilacs, etc., and got most astonishing results. Greenhousemen who saw the test plantings at New Brunswick hastened to try it out, and now sand has taken the place of black soil on a good many greenhouse benches. Prof. Nightingale has left the New Jersey station for a position in Honolulu, but his work goes on. And Prof. Shive continues the basic researches from which it all started.

Science News Letter, June 4, 1938

Air cooling for henhouses is to be tried in the hot weather in California's Sacramento valley.

Want to Try?

It's rather difficult for the beginner to make plants grow in a solution culture. But if you want to try your luck, here's how to go about it:

Use an ordinary quart fruit jar. Tie across its mouth a piece of mosquito netting, letting it sag about half an inch at the center. (It's a good idea to dip the netting in melted paraffin first.) Fill up with Shive solution (formula given below) until it just touches the netting. Put seeds on netting and cover with moist blotting paper until they sprout; then remove paper. Have a rusty nail at the bottom of the jar, to supply the iron the plants need.

To make the Shive solution: Have your druggist weigh out the following, very accurately:

24.50 grams of potassium acid phosphate.

12.28 grams calcium nitrate.

36.98 grams magnesium sulphate.

Dissolve each of these portions in half a liter of distilled water and keep in separate bottles. They are your stock solutions.

Take five cubic centimeters of each stock solution, pour into the culture jar, and add plain water enough to fill. Then plant seeds on the netting, and hope for the best. As (and if) the plants grow, keep adding diluted solution to hold water level to cover their roots.

BOTTLE-FED

The pot contains only sand, completely without soil mineral nutrients. These are added in solution from the jar as it flows, drop by drop, from the tube.

METALLURGY

Produces Cheap Pig Iron From Poor Ores in New Way

A BRITISH iron maker has been successfully producing cheap pig iron suitable for producing steel from relatively poor ores for two years now by a new and basically different treatment of the ore in the blast furnace, Prof. Richard S. McCaffery of the University of Wisconsin told the American Iron and Steel Institute.

Forced to make use of British ores low in iron and high in undesirable alumina by the great demand for iron and steel brought about by Europe's armament race, the British firm has successfully applied an American suggestion. The process, Prof. McCaffery indicated, holds great promise of industrial use in this country and elsewhere where ironmakers are forced to turn to similar inferior ores.

Technicians handling the treatment of the low-grade ore used disregard its varying and undesirable sulfur content during the blast furnace operation itself, an "omission" never before made in commercial production of pig iron, the raw material from which steel is made. Instead they use a combination of chemicals to remove the sulfur in a separate step.

Forgetting about the sulfur content during the blast treatment, technicians operating the furnace are able to go ahead and produce the maximum amount of pig iron at minimum expense in the form of coke consumed and wasteful slag produced. This procedure is necessitated by the poor quality of the ore. If the usual method had been followed, it was indicated, production at a cost comparable to that of iron from higher grade ores would have been impossible.

The sulfur is removed by soda ash and fluorspar in a hot ladle into which the molten pig iron is poured. Many other technical advantages follow from the new procedure, Prof. McCaffery also pointed out. The British plant is at Corby, Northamptonshire, very close to the ore supply.

Science News Letter, June 4, 1938

ENGINEERING

Oil Refinery Piping Damaged By Salts Formed by Acids

By-Products of "Dosing"—50,000,000 Pounds of Them—Are Reported as Exacting a Tremendous Economic Toll

WIDESPREAD use of acids to boost production from oil wells has brought in its wake a major trouble for the petroleum industry in the form of thousands of miles of ruined pipelines and hundreds of ruined refinery units, petroleum engineers report.

Salts, 50,000,000 pounds of them, produced largely as by-products of the acid "dosing" of wells, are eating the walls of expensive pressure piping and plugging refinery tubes, exacting a stupendous economic toll, they reveal.

They are in addition lowering the value of residual oils and tars, eating up in waste a considerable portion of the increased income earned by the use of the acid process which increases the wells' yield.

Greater even than the cost of replacement parts and labor is the loss caused by equipment being out of service while repairs are made.

Petroleum engineers are turning increasing attention today, however, to this problem and report a number of desalting methods.

Can Be Reduced

Heat, pressure, and the addition of fresh water remove some of the salt from commercial crude oil, increasing the life of piping and refinery equipment greatly at a low cost. A Michigan installation, described (*Petroleum Technology,* May) by Dr. Gustav Egloff and a group of petroleum engineers of the Universal Oil Products Company, reduced the salt in incoming crudes from 220 to 5 pounds per thousand barrels.

Incoming oil was mixed with about 10 per cent. of water, then heated to 250 degrees under a pressure of 60 pounds. The salt removal, 212 pounds for each 1,000 barrels of oil handled, reduced corrosion from a continual cause of breakdowns to a very minor maintenance factor.

Chemicals to break up the shell of emulsion which protects brine globules from the surrounding oil have been used with some success. Once this protective coating is destroyed, water particles settle out of the mixture very rapidly, carrying the salt with them. Different chemcials are needed in each oil-producing area, and the search for a general desalting chemical agent, suited to all types and mixtures of oil coming to a refinery, is still going on.

Electrical Method

Electrical desalting, in one plant, decreased the salt content of the crude oil from 200 to 8 pounds per 1,000 barrels. This particularly corrosive crude oil, from an Arkansas field, was mixed with water, then subjected to an alternating potential of 16,000 to 32,000 volts. Before the desalting equipment, still tubes were completely blocked with deposits of solid salt after turns of only three to six days, and corroded excessively. After desalting, runs of 60 to 70 days without shutdowns were the regular thing, with less corrosion per run.

Whirling an oil-salty water mixture to remove the salt water offers considerable future promise, the engineers report. In test runs, centrifuges have removed all but a half pound of salt from oil originally containing 160 pounds per 1,000 barrels.

Science News Letter, June 4, 1938

GEOLOGY

Philippines Become New Source of Manganese

SOOTY black rocks from many places in the Philippine Islands may become a new source of wealth for the Far Eastern commonwealth, as this rock is found to contain manganese, important steel-toughening agent, Ralph Keeler, mining engineer, reports. (*Engineering and Mining Journal*, May)

With an initial production of 255 tons in 1936, output increased to 12,206 tons in 1937, and production is increasing daily as more deposits are located and developed. Occurring in lens-shaped deposits of hard black psilomelane, a mineral that assays 50 per cent. metallic manganese, the ore bodies are worked by hand labor. After preliminary purification the ore is shipped to the seacoast, for eventual sale to Japan, the United States, and Italy. Japan is the largest buyer of Philippine manganese at present. Mechanized mining is expected greatly to increase the output in the near future.

Science News Letter, June 4, 1938

ARCHAEOLOGY

College Sports Warned To Avert Greek Fate

THE RISING tide of professionalism in sports at American colleges is viewed with alarm by one university professor who knows well what happened to athletics in ancient Greece.

Early Athenians, it appears, were enthusiastic amateurs at games and competitive sports. They enjoyed exercise. And besides, when war came, the fit citizen was ready to defend the state.

But later, when Athenians fell back on paid soldiers to fight their battles, they lost the civic incentive to be strong and supple. It was pleasanter really to watch several wonder fellows streak down a track or exhibit bulging muscles in a wrestling bout.

So, amateur athletics faded from popularity. And in came the super-specialized professional to take a bow.

Prof. Thomas Woody of the University of Pennsylvania, writing in School and Society, warns of the result:

"Professionalism corrupted Greek athletics, destroyed its vital spirit, and made sports unserviceable both to individuals and to Greek society. It will do the same today."

When athletics became a career, he explains, too much stress was laid on winning. One Greek professional stored up 1,400 prizes. To make prize money and win public fame, striving professionals and their trainers stooped to buy and sell victories.

The games at Olympia remained conspicuously fair and upheld amateurism. But even Olympic athletes had to be fined for trading victories.

Leaders like Galen deplored the lowering of physical standards. The Greek crowds were idolizing professionals like the boxers, who were over-stuffed and dull and enslaved to a treadmill routine.

In Corinth, Diogenes went so far as to crown himself with a pine wreath; and defended his award by arguing that he had conquered far greater antagonists than the wrestlers, for he had fought poverty, disrepute, anger, fear, pain, desire, and the most redoubtable beast—pleasure. But the Greeks did not heed.

Science News Letter, June 4, 1938

ENTOMOLOGY

Wet Weather Delays Grasshopper Emergence

GRASSHOPPERS in the danger zones of the West are still being held in winter quarters, as unhatched eggs, by the frequent barrages of rain that have swept the whole central part of the country this spring.

There has been no great amount of egg mortality, field workers of the U. S. Department of Agriculture informed Science Service, but while the hatching has been delayed, the crops in the grain belt and the grasses of the rangelands farther west have been taking advantage of the moisture to get a long head start.

Another effect is hoped for by the government scientists. If there is plenty of provender in the open grasslands of the West, the 'hoppers that hatch there may have enough to feed on near their hatching-places and will therefore not migrate toward the costlier grain fields.

In the meantime, the fighting forces in the field, well prepared with millions of pounds of arsenic-poisoned bait, are biding their time. As soon as the first swarms of little 'hoppers emerge and begin to crawl, they will spread their tempting but lethal banquet before them. In parts of the Southwest, from southern California across to western Texas, the new crop of grasshoppers is emerging, and the poison squads are already at work.

This year, for once, the defense forces of scientists and farmers have got the drop on the enemy.

Science News Letter, June 4, 1938

IN SCIENC

GEOLOGY

Record Quartz Crystal Travels 7,000 Miles

ENDING an odyssey of more than 7,000 miles on muleback, boat, and railroad, a 63-pound perfect quartz crystal, one of the largest and finest ever mined, arrived at the Bausch and Lomb Optical Company, Rochester, N. Y., from a mine on the flanks of the Serra de Mantiquiera, in the province of Minas Geraes, 1500 miles from the Brazilian seacoast.

Found in a region famous for its gem stone output, this giant crystal of quartz, a dioxide of silicon, chemically identical with ordinary sand, will be used in the manufacture of special lenses for microscopes. Quartz, unlike glass, passes ultraviolet light, commonly used to secure extreme magnifications. Scrap quartz of high quality, left over from lens and prism manufacture, is used as part of the "melt" in making optical glass.

Science News Letter, June 4, 1938

CHEMISTRY

Marston T. Bogert To Receive Priestley Medal

PROF. Marston Taylor Bogert, one of the nation's leading organic chemists and for 44 years a member of the faculty of Columbia University, has been awarded the Priestley Gold Medal of the American Chemical Society.

The medal, highest honor in chemistry, is granted once in three years. It was established in honor of Joseph Priestley, discoverer of oxygen in 1774. Priestley was raised in England but came to America late in life to escape hostility to his views as a nonconformist preacher.

Prof. Bogert will receive the award at the fall meeting of the chemical society, to be held in Milwaukee, Wis.

Alone, and in collaboration with his many students, Prof. Bogert is the author of more than 400 papers in synthetic organic chemistry. He has twice been president of the American Chemical Society and is an honorary member of many foreign scientific societies.

Science News Letter, June 4, 1938

NCE FIELDS

ASTRONOMY

Star Believed Closest Demoted From This Honor

WOLF 424 has been demoted from its recently proclaimed position as the nearest fixed star in the heavens. (See *SNL*, May 21)

A short time ago Dr. G. P. Kuiper of the University of Chicago's Yerkes Observatory, found from the star's spectrum that it had the very large parallax of eight or nine tenths of a second, which meant that it was relatively close to the earth. Now Dr. D. Reuyl of the University of Virginia's Leander McCormick Observatory, using photographs of 1925 and 1926, has found by the trigonometric method a preliminary parallax of only one-quarter that determined at Yerkes.

This means that instead of Wolf 424 being nearest star, there are more than 30 stars which are our nearer neighbors in space.

A year from now a better parallax will be obtainable through continued McCormick Observatory observations.

Science News Letter, June 4, 1938

MEDICINE

No Need to Worry Over Cancer From a Blow

MOST laymen and women — especially women—have worried over the possibility of cancer arising from a blow or other injury they have sustained. Of if cancer has developed, the patient or his friends and relatives are more than likely to ascribe it to a recent injury.

Such fears are groundless, in the opinion of leading cancer authorities. Dr. George T. Pack, of The Memorial Hospital for Cancer and Allied Diseases, New York City, explained why in a recent report to the American Society for the Control of Cancer.

Cancer of the breast, he pointed out, is most frequently considered by the laity to be caused by an injury. This is natural because of its susceptibility to injury. However, the cases which can be fairly said to have originated in injury are "much too small to carry weight," Dr. Pack said. The same is true for cancer of the bone. The number of cases where injury could possibly be accepted as the cause is so small as to make it "impossible to accept this theory of origin. In only one of the eight common varieties of bone sarcoma," Dr. Pack continued, "does trauma or injury have a possible influence."

He added further that none of the available evidence bears out the lay fear that cancer of the internal organs can be attributed to injury, or trauma, to use the medical term.

"Perhaps the best way to set the minds of the public at rest," Dr. Pack stated, "is to consult the records of the Great War. Surely the trauma was great enough and frequent enough and if it could cause cancer, there should be evidence to support or else deny the claim. It is encouraging to discover that the percentage of tumors among war veterans is no greater than among the civilian population and that there has been no significant increase in the incidence of tumors since the war."

Science News Letter, June 4, 1938

BIOLOGY

New Funds Make Available Biological Abstracts

THE journal of brief summaries on which biologists depend for condensed information, *Biological Abstracts*, has resumed publication, it is announced. The abstract journal had been compelled to suspend publication some months ago because of shortage of funds. New resources have been opened up which will enable the board of editors to catch up with unfinished work and carry on with the regular schedule. (*Science*, May 20)

Science News Letter, June 4, 1938

GEOGRAPHY

Springtime in the Rockies Poses for the Camera

See Front Cover

NAVAJO PEAK, rising 13,300 feet above sea level on the Continental Divide in Colorado, silhouetted against the rising cloud of a local storm at the beginning of the Rocky Mountain spring, which begins in early June.

That is the picture shown on the front cover of this week's SCIENCE NEWS LETTER, taken by Ronald L. Ives, Science Service geology writer.

The valley in the foreground once contained a great glacier, whose source, 30,000 years ago or so, was an ice mass near the horizon.

Science News Letter, June 4, 1938

BOTANY

Quintuplet Trilliums Found Near Washington

QUINTUPLET trilliums, almost as great a rarity among flowers as quintuplet babies are among our own species, were found growing on a single stem in the mountains near Washington, D. C., by two Washington botanists, Dr. Titus Ulke and Theodore Ruhoff. The specimen has been turned over to the U. S. National Herbarium, and Dr. Ulke expects to publish a technical description of the plant in a botanical journal soon.

Science News Letter, June 4, 1938

ARCHAEOLOGY

Ford's Ideas in Gathering Historic Relics Explained

HENRY FORD'S ideas of how to make an historic museum, as exemplified by his big museum and early American village at Dearborn, Michigan, were described to the American Association of Museums.

Mr. Ford's interest in accumulating historic objects — he has 100 original steam engines—is not merely an antiquarian hobby, declared Fred L. Black of the museum staff at Dearborn. One purpose is to show the public how far and how fast we have come in technical progress in the past century.

The 100 steam engines, most of them in running order, show development of steam power from a Newcomen atmospheric pressure engine made in 1760 to modern types. The development of the telephone, generators, television, the plow and the churn are other lessons from history which the museum teaches by series of actual objects once used.

Transporting historic shops and cottages to the early American village was undertaken, Mr. Black explained, because of the difficulty of preserving many of these buildings where they originally stood. Many were far off the beaten track. The village, assembled and furnished, enables visitors to enter the America of bygone days, to see the village blacksmith, postman, and other character types at work.

The bicycle shop where the Wright brothers made their first airplane and the house they lived in were both moved board by board and brick by brick from Dayton, Ohio, and furnished as nearly as possible in the 1903 state.

Unlike Williamsburg, Virginia, the village does not reconstruct one limited period of American life.

Science News Letter, June 4, 1938

ANTHROPOLOGY

An Ancient Age of Youth

The Cave Man Had No Grandpa, No Grandma, For in That Distant Time No One Lived to Grow Old

By EMILY C. DAVIS

DID you ever wonder what old folks looked like, back in the Old Stone Age?

Ever imagine a Stone Age Grandma 60,000 years ago, dressed in bearskin wrapper, sitting in the sun by her cave and telling small boys stories about Grandpa when he was young and brave and went mammoth hunting? Did you ever imagine a Grandpa who was an elderly caveman with a beard and rheumatism?

If so, wipe out those mental pictures. For here's the answer:

There were no graybeard Grandpas among Europe's cave men. And as for Grandma—Well, it was rare for a woman to live beyond 40. The Old Stone Age was an age of youth.

This is the conclusion drawn from studies by Prof. Henri Vallois, French anthropologist. Prof. Vallois has estimated—from evidence in skulls—the ages of 187 prehistoric individuals when they died. His data include most of the celebrated skulls now treasured in Europe's scientific collections.

The French scientist's way of asking Stone Age men, women, and children, "How old did you live to be?" is just this:

He examined either their skulls, or else technical descriptions of their skulls written by other scientists.

Now, a skull naturally represents the age of the individual when he died. It can't be otherwise, despite the hoary joke about the museum that could boast of having two skulls of Oliver Cromwell—one of Cromwell as a young man, and one of Cromwell as an old man.

So, the long-buried skulls of Stone Age folk represent their ultimate ages. And how old they were is written right on the skull, fortunately for scientists bent on asking these very personal census questions of earth's early inhabitants. The indicator of age in a skull is simply the degree to which bones of the head are joined together.

In life, as a baby's head develops, there are islands of bone separated by channels of cartilage. As the child grows older, the islands spread and the cartilage channels become narrower until they are mere cracks. A cracked individual, in the strictly literal sense, is a young one.

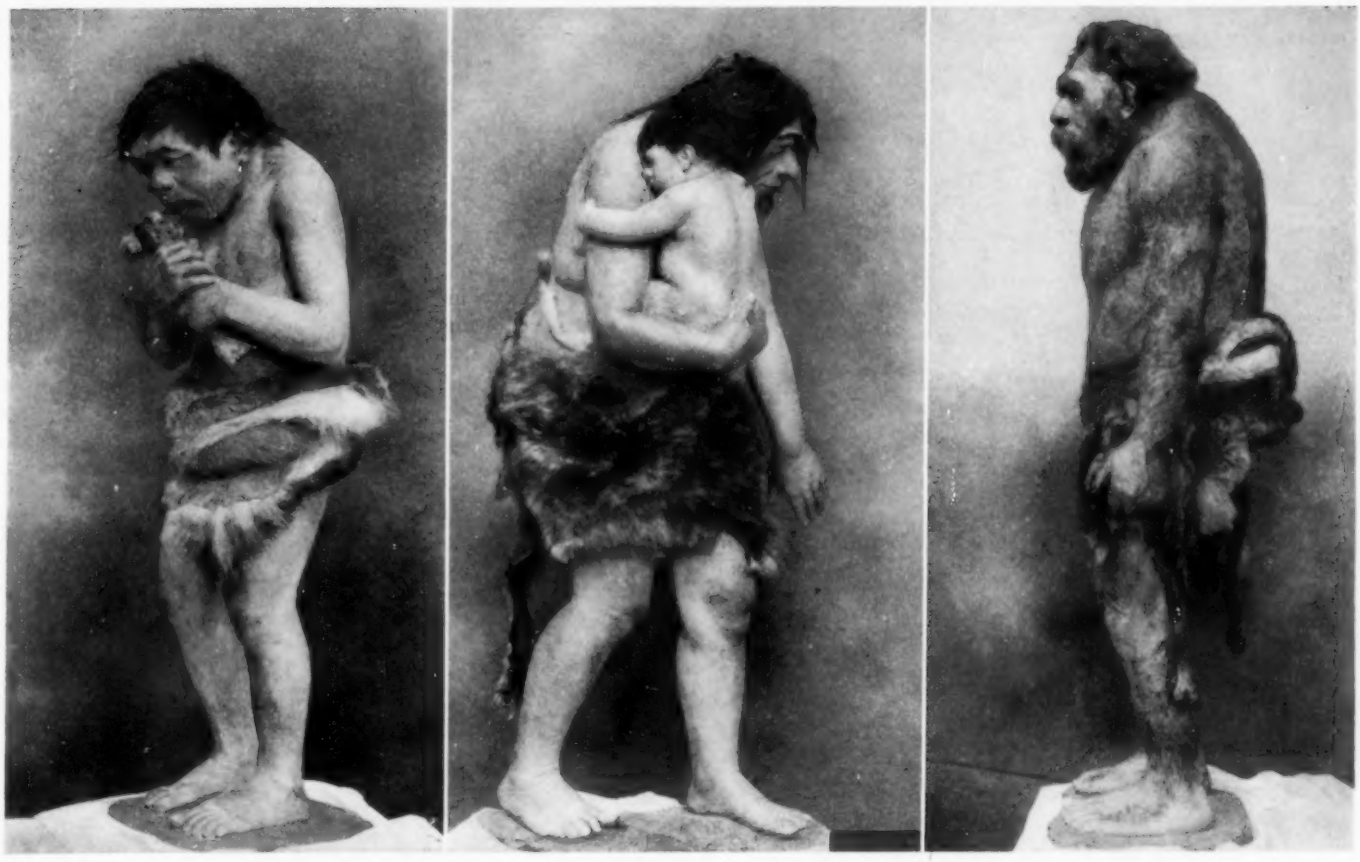
In time the cracks join, forming seams, and the individual is truly hard headed. But the fine, irregular lines of the seams, or sutures as anatomists call them, remain visible. They look like jagged boundary lines of a map traced over the skull.

It is by examining these cracks or seams in a skull that the age of a prehistoric individual can be judged with fair accuracy. And that is how Prof. Vallois got his prehistoric census: By going from museum case to museum case, rather than from door to door in the usual census manner.

No one could have found out a prehistoric cave dweller's age, anyway, when he was alive. His skull certainly wouldn't have been available, and nobody on earth then could count birthdays. In the depths of Stone Age ignorance, a cave man didn't even know that he didn't know his own age—if you follow the idea. Counting the years is a far higher problem in thinking than

YOUNG ARTISTS

Cro-Magnon artists at work, 30,000 years ago in a cave in France—a group of young and middle-aged men, with no old folks. The picture's correct, therefore, according to Prof. Vallois' ideas of Stone Age population. (Photo from American Museum of Natural History)



BRIEF SPAN

The boy on the left was typical of Old Stone Age people when the average person did not survive 20. The center figure is of a mother and child; women then rarely lived to be more than 40. At the right is an old man—old then meant about 50. (Field Museum photos)

Old Stone Age man ever tackled. He probably couldn't count his own children, let alone how many winters they had seen.

But now, thousands of years after he lived on earth, a prehistoric individual like that can be set down in statistical tables as having reached 20 years, or 30, or 40.

So now you can picture the Old Stone Age as run by young folks, if Prof. Vallois' collecting of prehistoric ages represents a fair cross-section of population in those good old days.

Judging by his census taking, there wasn't an Old Stone Age man or woman who reached the Bible's famous allotment of three score years and ten.

Certainly he found no evidence of anybody living to be 70 in the middle of the Old Stone Age, which is the point at which he started his census. That would be about 60,000 years ago, when Neandertal Man was the dominant race on earth.

From bones of these Neandertalers, found in caves and in the open in many countries of Europe and in Palestine, it has been known pretty well what they looked like. The results shown in restorations by museum artists are anything but flattering. A typical Neandertaler went about with his head thrust forward, and peered out from under heavy beetling eyebrow ridges. His chin receded. His nose was bulbous and his walk was clumsy. Some Neandertalers were better built, but this was the main type in Europe.

In modeling or painting these people, museum artists attempt to show a home life scene around a cave. They usually include young and old in the scene.

But according to Prof. Vallois' findings, the aged would be out of place in such a setting. A Neandertaler who led a hard life might look timeworn at 40, with gray hairs and wrinkles, but scarcely bent and withered and venerable. At least, the French anthropologist found not a single Neandertal skull that would go with such aged traits. And if there were any such, it seems strange that none has come to light, for a good many Neandertalers have been unearthed.

According to Prof. Vallois' investigation, the average child of a Neandertaler never grew up. Over half the boys and girls died before they were 20.

Here is the way his Neandertal figures look:

55 per cent. died before 20.
40 per cent. died between 20 and 40.
5 per cent. died between 40 and 50.

That totals exactly 100 per cent.

The bright and reassuring slogan that "life begins at forty" would have meant nothing to these Neandertalers. They never worried about growing old. Nobody did.

However, Stone Age time marched on. The Neandertal pattern of man vanished from the world, and other races, notably the Cro-Magnon, were leading the parade 30,000 years ago. Cro-Magnons were an improvement in beauty, meaning to say they looked more like us. The men were tall, often six-footers, and had better profiles. Cro-Magnon man is perhaps best known today for his habit of painting admirable pictures of big game animals on walls in caverns of France and Spain. As the world's first artists, they have gained wide, if belated appreciation.

Still, even these people had not discovered the pleasures and troubles of

old age. More of their babies grew up. But life still ended around 50, if it lasted that long.

Here are Prof. Vallois' figures on human life, as it was 30,000 years ago:

34 per cent. died before 20.

53 per cent. died between 20 and 40.

10.5 per cent. died between 40 and 50.

That doesn't quite total 100 per cent. But, the fact is Prof. Vallois did find three semi-elderly individuals among his 187. All three lived later than the Neandertal era. None of them was what we would call aged. In their skulls, there were important sutures unclosed when they died.

Growth Continues

It may seem surprising that a human head should still be putting itself together, and still uncompleted at the age of 50. But, just recall recent scientific reports showing that human growth and development go on far into middle age. A "grown" person's chest continues to broaden slightly until middle age. Ears grow longer. Hands and feet become larger. The mouth widens.

Growing up is a lifetime job for us, and the Old Stone Age people seem never to have attained this complete bodily development.

Prof. Vallois gives vital statistics for a third period of the Old Stone Age. This is the transition time, just before the New Stone Age dawned, bringing in the pastoral and farm era. Man was improving his lot in the world, but he wasn't living any longer, nor had he learned how to keep more children alive. On the contrary, fewer grew to be 20. And old age was still an undiscovered adventure.

One point brought to light by the French anthropologists is curious. That is, women died younger than men in the Old Stone Age.

In modern experience, we find just the contrary. Girl babies are less delicate than boys, and more girls survive infancy. And from then on, comparing the sexes at advancing ages, women are found outlasting the men.

But in the Old Stone Age, women died younger. It is particularly strange, considering that women did not take so many physical chances. It was the man who stalked dangerous wild beasts to provide meals and fur coats. The man was the fighter, who had to drive off disagreeable neighbors or meet hostile strangers in combat. At least, so archaeologists judge, because when they find a prehistoric skeleton with stone axes or spear points nearby, it is almost always a man.

Women, it is true, endured hardships of childbirth, and Prof. Vallois mentions this as a possible cause of untimely death among Stone Age women. But this alone, he believes, is not sufficient explanation. Whatever it was that made life especially hard and hazardous for the cave woman, aside from bearing children, is something not yet revealed by archaeological remains of that rough and ready era.

Prof. Vallois has an interesting theory as to why Stone Age people never grew old. Unfortunately, it's no Fountain of Youth discovery. Nothing like that. Simply, that in the good old days when human beings lived almost as wild as the birds and animals, they died off the way wild birds and beasts do.

Natural Lifetime

Wild things, he explains, have a tendency to die when they get past their prime. They have spent their natural lifetime. And early man, if he escaped being run down by a rhinoceros, or some other hazard, lived out a similar natural lifetime. This lifetime of wild mankind was between 40 and 50 years. The French anthropologist thus credits civilization with stretching man's lifeline far beyond what nature allowed under wild conditions. The average man today can expect to live about 60 years. For women the average lifetime is 54. In other words, the average person today lives longer than the longest-lived humans in the Good Old Stone Age.

Or, look at it this way: the average man or woman today can expect to blow 60 candles, at least, off a birthday cake. In the Stone Age, any one was lucky to survive the teen age.

It has taken the world a long, slow time to increase the span of life for the average human. According to figures once reported in Paris, the average Roman under the Caesars lived 18 years, which is hardly better than the Stone Age could do. In France at about the time of the French Revolution, an average lifetime was about 29 years. In 1850 the average had risen to 37 years; in 1880, 40 years. Now it has passed the 60 mark.

Science claims credit for increasing an individual's prospects of a longer life. With thousands of scientists studying diseases alone, and other thousands studying diet, and still others studying normal human bodies, mankind has been able to apply the results with what amounts to lightning speed. At least, it seems like lightning speed, to double the average lifetime within two centuries, after all the thousands of years that went by without much progress.

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Science News Letter, June 4, 1938

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GENERAL SCIENCE

Better Science Education Is Aim of Committee

SCIENCE, important through its applications in every phase of the daily lives of all the people, deserves a larger place in general education, is the belief of a newly organized special committee of the American Association for the Advancement of Science. But to win that place, science teaching must be brought to a maximum of efficiency and interest.

The new body, titled the Committee on Improvement of Science in General Education, has as its chairman Prof. Lloyd W. Taylor of Oberlin College. Six special objectives are stated by Dr. Otis W. Caldwell, general secretary of the Association:

1. To clarify and define the problems involved in teaching the sciences as a part of the program of general education.

2. To develop a more scientific attack upon problems of science teaching; that is, to promote experimentation; to collect evidence, to encourage the use of procedures justified on the basis of organized and evaluated evidence in contrast to opinions, untested assumptions, and uncritical acceptance of traditional practices.

3. To disseminate information about the committee's work, and to secure constructive criticism by means of discussion groups in college and university centers, by participation in programs, and by such other means as may be found effective.

4. To obtain and to use financial sup-

port for such work in the sciences as gives promise of being effective in improving the teaching of science in general education.

5. To serve as a clearing house for coordinating the activities of the several agencies now working on parts of the whole problem, and new agencies which may be initiated for the improvement of science teaching.

6. To act in an advisory capacity on any studies approved by it and supported through it; to require and coordinate reports of such studies; and to provide for publication of the findings.

Science News Letter, June 4, 1938

PHYSICS

Presence of New Particle Suspected in New Research

Long-Sought Neutrino Believed to Have Taken Part In Three-Body Subatomic Collision, Explaining Results

NEW experimental research, strongly indicating the existence of the much-mentioned and long-sought atomic particle, the neutrino, is announced by Drs. H. R. Crane and J. Halpern, at the University of Michigan.

The Michigan physicists describe (*Physical Review*, May 15) new methods of studying impact relations in atomic collisions.

"This is the first experiment," state Drs. Crane and Halpern, "which has given any information at all regarding the momentum relations in the individual disintegration event.

"Although the results are of limited accuracy," they add, "they strongly indicate that momentum is not conserved between the electron and the nucleus alone. Hence the laws of momentum, as well as those of energy, indicate that a third particle participates in the disintegration. This third particle, while undetected of itself, is probably the long-sought neutrino.

A gaseous compound of radioactive salt was placed in a Wilson cloud chamber, a device which renders visible the tracks of ionizing particles liberated in radioactive disintegrations. Several times previously the disintegration of a substance in the form of a gas has been suggested as a key experiment for measuring the momentum or energy of recoil in atomic studies. The difficulty has been, state the scientists, that the length of track made by the recoiling nucleus is far too short for observation, even in a cloud chamber operated at the lowest obtainable pressures.

Drs. Crane and Halpern, however, circumvented this experimental difficulty by allowing the ions formed to diffuse, for a little while, until the clusters created attained a diameter of several millimeters. The individual droplets in these clusters could then be counted and the energies of the motion of the recoiling nucleus could be estimated. By applying magnetic fields and bending the tracks of the particles the momentum of the nucleus could be compared with that of the electron.

The result of the research shows that the basic laws of the conservation of energy and of momentum (fundamental building stones of physical theory) do not appear to be obeyed for the collisions created. Rather than abandon these basic laws, which are so well substantiated everywhere else through the field of physics, Drs. Crane and Halpern believe a third particle, the neutrino, took part in the collision so that it was a three-body, instead of a two-body, impact. Such a condition could easily explain the experimental results obtained.

Science News Letter, June 4, 1938

Long, curving eyelashes are normal for children, but usually give place to straight lashes about the age of 16.

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following preliminary epicenter:

Monday, May 23, 2:18.7 a. m., E.S.T.

Under ocean 20 miles east of Honshu, principal island of Japanese archipelago, on which Tokyo is situated. Latitude 36 degrees north, longitude 141 degrees east.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL May 21.

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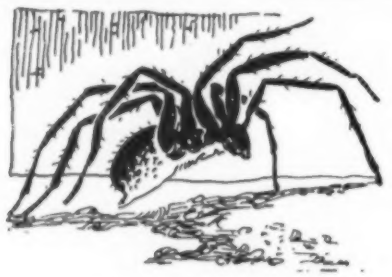
ENTOMOLOGY

NATURE RAMBLINGS
by Frank Thone



Stingers Debunked

SCORPIONS and spiders come in for a drastic debunking at the hands of Prof. W. J. Baerg, University of Arkansas entomologist. (*Natural History,* June) For all their dreadful reputation, there are no really deadly scorpions in the United States, and the only dangerously poisonous spider is the already notorious Black Widow. Scorpion stings, declares Prof. Baerg, are no worse than those of wasps, and tarantula bites are about on a level with the jab of a dull pin.

Scorpions are ready to sting on slight provocation. The effect is immediately painful, but passes in about half an hour. Tarantulas are not quite so aggressive, though if you really want one to bite you she will usually accommodate, upon sufficient provocation. But some tarantulas won't even do that. Prof. Baerg mentions appreciatively a curly-haired Honduran tarantula that has never yet bitten him, despite all kinds of coaxing. He seems to be very fond of Curly, as he calls his pet.

The Arkansas biologist is willing to venture one categorical statement with regard to tarantulas: "No tarantula has a poison that produces dangerous general symptoms in man. A few tarantulas are poisonous to man but the effect is local."

Outside the United States, and confined to Mexico so far as now known, there are a very few species of scorpion whose sting may result in death. One of them, ironically enough, prefers to live in the neighborhood of human habitations. Since the development in Mexico of a serum treatment for scorpion sting, the number of cases ending fatally has been much reduced.

Even the dreaded Black Widow, although admittedly able to cause extreme pain and violent discomfort, rarely kills, says Prof. Baerg. "The patient always recovers (excepting possibly infants) unless hampered by serious complications such as a very weak heart, or a syphilitic condition."

Science News Letter, June 4, 1938

PUBLIC HEALTH

Carbon Disulfide Poisoning Attacks Workers in Rayon

SIX new cases of carbon disulfide poisoning among workers in rayon manufacturing plants are reported by Philadelphia scientists. (*Journal, American Medical Association,* May 7.)

This insidious form of poisoning, widespread in Europe, has received little medical attention in the United States, according to Dr. Samuel T. Gordy and Max Trumper, who two and one-half years ago urged a federal survey of the rayon industry. Such a survey is now being made.

This country is one of the largest rayon manufacturing countries in the world, having produced 290 million pounds in 1936.

Of the 25 rayon factories with 50,000 employes now operating in the United States, 19 are viscose plants using carbon disulfide.

For every three pounds of rayon produced, one pound of carbon disulfide must be used. In 1936 more than 33 million pounds of carbon disulphide was consumed by one large viscose plant.

The poisoning makes physical and mental invalids of those it attacks. Headache, stomach trouble, muscular cramps, motor palsies, wavy vision, irritability, horrible dreams, hallucinations, primary increase in libido and later diminution and loss of sexual function are some of the manifestations of the poisoning. Women are affected more often than men, the medical literature shows.

The poisoning is of both the acute and chronic types. Tolerance is not established, or rarely so, according to Dr. Gordy and Mr. Trumper. On the contrary there is increased susceptibility to poisoning on further exposure. The psychosis may be permanent, they state.

Until the introduction of artificial silk, the rubber industry was the principal origin of disulfide poisoning.

That the condition is not more generally known of in the United States is strange, the Philadelphia scientists state. Industrial diseases have not had the study in America that obtains in many European nations where they are reportable and compensable, is a possible explanation, they believe.

Science News Letter, June 4, 1938

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Microfilm Documents Available

WIEGNER, GEORGE: Ion Exchange and Structure—*Transactions of the Third International Congress of Soil Science,* Oxford, England, 1935. Nelson J., Translator. Doc. 1114. 55 pp. 75c.

LAHY, J. M.: An Educational and Psycho-technical Bureau in Cooperation with a Psychopedagogical Clinic in a Rural Community—*Le Travail Humain* 5e Annee—No. 2 Juin 1937. Walsh F. G., Translator. Doc. 1115. 64 pp. 84c.

Copies of microfilm documents may be obtained from Bibliofilm Service, Care Library of the U. S. Department of Agriculture, Washington, D. C. (*See SNL,* March 5, 1938)

•First Glances at New Books

Additional Reviews On Page 372

Psychiatry

PSYCHIATRY, JOURNAL OF THE BIOLOGY AND THE PATHOLOGY OF INTERPERSONAL RELATIONS, Vol. 1, No. 1, February, 1938—*William Alanson White Psychiatric Foundation,* Quarterly, $6. per year; $6.60, foreign. A new journal devoted to the social aspects of psychiatry and dedicated to the memory of Dr. William Alanson White, a pioneer in this field. The surprising use of a bright yellow paper has psychological, but no psychiatric significance; it is based on spectrophotometric tests. The type, the ink, the length and spacing of lines were similarly chosen for maximum readability.

Science News Letter, June 4, 1938

Physiology

LA DUREÉ EXTREME DE LA VIE HUMAINE—E. J. Gumbel—*Hermann et Cie, Paris,* 65 p., 18 fr.

Science News Letter, June 4, 1938

Physics

SPECTROGRAPHIE DE MASSE: LES ISOTOPES ET LEURS MASSES—Louis Cartan—*Hermann et Cie, Paris,* 91 p., 20 fr.

Science News Letter, June 4, 1938

Biology

DE CERTAINES RÉGULARITÉS DES CHANGEMENTS DE LA "MATIÈRE VIVANTE" SOUS L'INFLUENCE DES FACTEURS EXTERNES, PRINCIPALEMENT DES RAYONS X ET DU RADIUM—G. A. Nadson—*Hermann et Cie, Paris,* 26 p., illus., 12 fr.

Science News Letter, June 4, 1938

Physics

CONTRIBUTION A L'ETUDE DES RÉGIONS IONISÉES DE LA HAUTE ATMOSPHÈRE—R. Rivault—*Hermann et Cie, Paris,* 91 p., 20 fr.

Science News Letter, June 4, 1938

Home Economics

MODERN BOOK OF HOME CANNING—M. G. Kains—*Greenberg,* 184 p., $2.

Science News Letter, June 4, 1938

Documentation

VALID OR FORGED? QUICK AID TO DECISION ON QUESTIONED WRITING—Lloyd L. Jones—*Funk & Wagnalls,* 168 p., illus., $2. A book suited for reading by the layman; not a technical volume for the specialist in the field.

Science News Letter, June 4, 1938

Biology—Philosophy

BIOLOGY AND MARXISM—Marcel Prenant—*International Pubs.,* 223 p., $2.50. This book will doubtless have its enthusiastic readers among those already committed to the Marxist dogma. But biologists generally will be as suspicious of an effort to make their science the tail to the Marxist kite as they are of similar efforts to subjugate it to religious fundamentalism.

Science News Letter, June 4, 1938

Psychology

THE ADOLESCENT—Ada Hart Arlitt—*Whittlesey,* 242 p., $2. A book for parents by an outstanding student of this interesting period in human development.

Science News Letter, June 4, 1938

Engineering

PUBLIC WORKS ENGINEERS' YEARBOOK, 1938—*American Public Works Assn.,* 480 p., $3.50. A comprehensive review of significant developments in 1937 in the public works field. Indexed.

Science News Letter, June 4, 1938

Anthropology

FIRST PENTHOUSE DWELLERS OF AMERICA—Ruth M. Underhill—*Augustin,* 155 p., $2.75. How Indian life varies, from pueblo to pueblo, in the Southwest is shown vividly in this descriptive tour of the penthouse villages. The writing style is pictorial and pleasantly literary, and the photographs by Lilian Reichard are excellent.

Science News Letter, June 4, 1938

Mathematics

TRIGONOMETRY (Rev. ed.)—A. R. Crathorne and E. B. Lytle—*Holt,* 191 p., 111 p., $2. with tables, $1.70 without tables. A high school or college freshman text book.

Science News Letter, June 4, 1938

Psychology

FUNDAMENTALS OF EDUCATIONAL PSYCHOLOGY—O. B. Douglas and B. F. Holland—*Macmillan,* 598 p., $2.50. A college textbook from the University of Texas.

Science News Letter, June 4, 1938

Psychology

PHYSIOLOGICAL OPTICS—Vernon W. Grant—*Professional Press,* 240 p., $4.

Science News Letter, June 4, 1938

Psychiatry

MENTAL HEALTH THROUGH EDUCATION—W. Carson Ryan—*Commonwealth,* 315 p., $1.50. This report contains a wealth of information obtained in a year of visiting schools and clinics of various kinds throughout the United States. The chapter on "Next Steps" should be of interest to all educators and persons supporting schools or influencing educational trends.

Science News Letter, June 4, 1938

Sociology

THE STORY OF SOCIAL PHILOSOPHY—Charles A. Ellwood—*Prentice-Hall,* 581 p., $3.50. Principal thinkers on social questions, from Plato to Lester Ward, are taken up one by one. For each there is a brief biographical sketch, a condensed statement of his social doctrine, and a critique. The book should be useful to both the general reader and the student of sociology.

Science News Letter, June 4, 1938

Psychology

PRIMARY MENTAL ABILITIES—L. L. Thurstone—*Univ. of Chicago Press,* 121 p., $2. Psychometric Monographs, No. 1. This monograph is termed by Dr. Thurstone "The first major application of the theory of factor analysis that was described in 'The Vectors of Mind'"—a statistical approach to the study of personality.

Science News Letter, June 4, 1938

Psychology

EMOTION AND THE EDUCATIVE PROCESS—Daniel Alfred Prescott—*American Council on Education,* 323 p., $1.50. This is the report of a committee on the relation of emotion to the educative process and is the outcome of an exploratory study involving about four years of research.

Science News Letter, June 4, 1938

Mathematics

EXCURSION IN MATHEMATICS—Ernst R. Breslich—*Orthovis,* 47 p., illus., $1.50. A novel and interesting little book which acquaints school children with some of the basic concepts of geometry. Three-dimensional photographs enable the students to visualize the various basic forms of geometry which may not have reality when illustrated with the common two-dimensional diagrams of conventional books.

Science News Letter, June 4, 1938

Psychology—Biography

MY VOCATION, BY EMINENT AMERICANS; OR WHAT EMINENT AMERICANS THINK OF THEIR CALLINGS—Earl G. Lockhart, comp.—*Wilson,* 334 p., illus., $2. In this book you can learn what Byrd thinks of aviation, what Dr. Fosdick thinks of the ministry, what Gregg thinks of stenography, what William Allen White thinks of journalism, what John Dewey thinks of teaching, and how a number of other leaders regard their life's work.

Science News Letter, June 4, 1938

•First Glances at New Books

Additional Reviews On Page 371

Psychology

BABY'S POINT OF VIEW—E. Joyce Partridge—*Oxford,* 94 p., $1. Parents, equally with educators, will find interest in this small book devoted to big emotional needs of very small humans. Dr. Partridge, a British writer formerly psychotherapist at Tavistock Clinic, believes that "Neuroses and personality difficulties of every kind originate, in the main, whilst the sufferer is quite a tiny baby."

Science News Letter, June 4, 1938

Mathematics

ESSENTIALS OF ENGINEERING MATHEMATICS—J. P. Ballantine—*Prentice-Hall,* 502 p., tables, 76 p., $3.75. The author gives the objective of the volumes as "To introduce the Calculus in a rigorous, practical form."

Science News Letter, June 4, 1938

Psychology

THE PSYCHOLOGY OF SPEECH — Jon Eisenson—*F. S. Crofts,* 280 p., $2.25. This text emanating from Brooklyn College contains, in addition to sections on the origin and development of speech and speech disorders, a section on the psychology of the audience.

Science News Letter, June 4, 1938

Ornithology

THE BIRDS OF EL SALVADOR—Donald R. Dickey and A. J. Van Rossem—*Field Museum of Natural History,* 609 p., plates, $4.50. A thoroughgoing monograph of the avifauna of a restricted but highly interesting Neotropical area.

Science News Letter, June 4, 1938

Physics

A TEXT-BOOK ON CRYSTAL PHYSICS—W. A. Wooster—*Cambridge* (*Macmillan*), 295 p., $4. Until the last century almost the only use man made of crystals was in jewelry. The science of crystals, therefore, contains a great deal of information about the optics of crystals but very little else. This British text gives a very clear exposition of the much broader physical concepts relating to crystals.

Science News Letter, June 4, 1938

Radio

TELEVISION: A STRUGGLE FOR POWER —Frank C. Waldrop and Joseph Borkin —*Morrow,* 299 p., $2.75. This book is written by a Washington political writer and a communications analyst, until recently an economist with the Federal Communications Commission. It discusses television technology with sufficient detail to provide background for the authors' primary theme: that there is a strenuous behind-the-scenes struggle for control of the future giant of the communications industry. The introduction is written by George Henry Payne, one of the liberal members of the F.C.C.

Science News Letter, June 4, 1938

Botany—Medicine

HAYFEVER PLANTS OF THE MIDDLE WEST—Norman C. Fassett, Lester McGary and Laura F. Bates—*John S. Swift Co.; Obtainable from L. F. Bates, 925 Mound Street, Madison, Wis.,* 52 p., illus., diagrams, $1. Brief botanical descriptions, with identification sketches and distribution maps, of several scores of trees and herbs whose pollen causes hayfever. The territory covered comprises the states of Minnesota, Iowa, Missouri, Illinois, and Indiana.

Science News Letter, June 4, 1938

Education

A TECHNIQUE FOR APPRAISING CERTAIN OBSERVABLE BEHAVIOR OF CHILDREN IN SCIENCE IN ELEMENTARY SCHOOLS—Joe Young West—*Teachers College, Columbia Univ.,* 118 p., $1.60. The modern tendency away from setting arbitrary values on student achievement and toward the use of meaningful descriptions of the pupil's progress is the inspiration for this research study.

Science News Letter, June 4, 1938

Economics—Botany

PROCEEDINGS OF THE ASSOCIATION OF OFFICIAL SEED ANALYSTS OF NORTH AMERICA, 1930, 1931, 1932, 1933—*Publ. by the Association,* 298 p., $3. Orders should be addressed to W. A. Davidson, Secretary-Treasurer, Division of Seed Investigation, U. S. Dept. of Agriculture, Washington, D. C.

Science News Letter, June 4, 1938

Biology

ANIMAL BIOLOGY (2d ed.)—Lorande Loss Woodruff—*Macmillan,* 535 p., illus., $3.75.

Science News Letter, June 4, 1938

Horticulture

PLANNING AND PLANTING YOUR OWN PLACE—Louis Van de Boe—*Macmillan,* 290 p., illus., $4.50. One of the joys of owning a home is the building around it of a suitable living frame. This book tells, in considerable practical detail, how to go about laying out the grounds of small and medium-sized places, what to plant, and when and how to do the planting.

Science News Letter, June 4, 1938

Psychology

RECENT EXPERIMENTS IN PSYCHOLOGY —Leland W. Crafts, Theodore C. Schneirla, Elsa E. Robinson, Ralph W. Gilbert—*McGraw-Hill,* 417 p., $2.25. Modern trends in psychological research are reflected in the varied material included in this survey of experimental work. Some interesting chapter headings are "The Origin of the Cat's Responses to Rats and Mice," "Migration and the 'Instinct' Problems," "Facial Expression in Emotion," "Forgetting During Sleep and Waking," "A Psychological Study of 'Lightning Calculations.'" There are many others.

Science News Letter, June 4, 1938

Psychology

PLAY AND MENTAL HEALTH — John Eisele Davis—*Barnes,* 202 p., $2.50. Recreation, as well as occupation, has its place in the treatment of the mentally ill and building up mental health in the normal child. The author here proposes play as effective means for promoting mental hygiene in schools.

Science News Letter, June 4, 1938

Chemistry

QUALITATIVE CHEMICAL ANALYSIS (Rev. ed.) — Louis J. Curtman — *Macmillan,* 514 p., $3.75. In the seven years since the appearance of the first edition of this excellent book there have been many advances in techniques. Prof. Curtman herewith brings the volume up to date while keeping the essential qualities of the prior edition. One section of the new material deals with semi-micro methods.

Science News Letter, June 4, 1938

Psychology

AN INTRODUCTION TO THE FIELDS OF PSYCHOLOGY—Emily S. Dexter and Katharine T. Omwake—*Prentice-Hall,* 236 p., $1.75. A textbook from Agnes Scott College surveying the place of psychology in such varied fields as medicine, advertising, law, and even animal training.

Science News Letter, June 4, 1938

Psychology

IN THE NAME OF COMMON SENSE—Matthew N. Chappell—*Macmillan,* 192 p., $1.75. If "Love makes the world go round," worry may be blamed for much friction in its rotation. In this volume a Columbia University psychologist makes some interesting suggestions for control of worry.

Science News Letter, June 4, 1938